towards saturation in summer, the sky at the same time becomes more completely cleared of clouds than in winter. Thus the mean cloudiness in winter indicates that four-tenths of the sky is covered, but in summer there is only one-tenth. This increased relative humidity, occurring simultaneously with increased clearness of sky, is an important feature of the climate of Alexandria, being productive of a heat in the direct rays of the sun much less intense than the clearness of the sky and the latitude might lead us to expect.

The mean annual temperature is 68°·7, the minimum being 57°·6 in January, and the maximum 78°·9 in August. The coldest January, 54°·0, occurred in 1880, and the warmest, 62°·1, in the following year, there being thus 8°·1 of a difference. No such difference occurred in the summer months. Thus the coolest August was 77°·7 in 1876, and the hottest, 80°·2 in 1880, the difference being only 2°·5. At Cairo the differences of temperature are much greater. The daily range is considerably greater than that of Alexandria; the mean temperature of January is 54°·1, and of August 84°·5, and as regards variation of the monthly temperatures from year to year, the mean of January was 50°·0 in 1880, but 59°·2 in 1881; and the mean of August was 80°·6 in 1876, but 90°·7 in 1877, the daily range for the two seasons being thus 9°·2 and 10°·1.

At Alexandria the mean annual rainfall is 8·12 inches, falling on 44 days. The largest annual fall was 10·75 inches in 1876, and the least 3·42 inches in 1879. The following are the means in inches for the months:—January 1·95, February 1·46, March 0·72, April 0·15, May and September 0·02 each, June, July, and August *nil*, October 0·58, November 1·52, and December 1·70. Heavy rainfalls are of occasional occurrence. During these seven and a half years the fall for one day exceeded an inch on 13 occasions. The largest of these falls 3·00 inches, occurred on October 7, 1876. Hail has been recorded on nine separate days in all, and thunder and lightning on eight days.

The following peculiarity in the annual march of the temperature is noteworthy. The mean temperature of June is 75°·0, July 77°·5, August 78°·9, September 77°·7, and October 74°·4, from which it is seen that September is warmer than July, and October nearly as warm as June. This peculiarity is still more striking if we look exclusively at the daily maximum temperatures which are so important an element of climate. To show this, we subjoin the means and extremes of the daily maxima, week by week, from July 1 to October 27:—

1876-81.	Means.	Highest observed.
July 1–7	80°·3	86°·2
,, 8–14	80·6	84·0
,, 15–21	81·6	86·2
,, 22–28	81·7	88·0
July 29–Aug. 4	81·8	86·5
Aug. 5–11	81·9	87·1
,, 12–18	82·2	86·5
,, 19–25	83·8	97·2
Aug. 26–Sept. 1	83·4	90·1
Sept. 2–8	83·4	95·0
,, 9–15	83·4	93·9
,, 16–22	82·4	88·0
,, 23–29	83·3	97·9
Sept. 30–Oct. 6	83·4	97·9
Oct. 7–13	82·1	103·1
,, 14–20	79·7	87·4
,, 21–27	79·3	84·0

Thus, then, we see that the highest temperatures during the year have taken place in the end of September and the first half of October, and that absolutely the highest temperature yet recorded, 103°·1, was on October 11, 1877; and that while the highest weekly mean occurred in the latter half of August, a secondary maximum, nearly as high, occurred in the beginning of October. It will be also observed that up to the close of October, the temperature is still nearly as high as in the beginning of July, but after this date temperature rapidly declines. That this is no chance result peculiar to the years of observation is shown by the recurrence of this feature of the climate year by year, as well as by the temperature of Jerusalem and other places in the East.

Practically, from May to September inclusive, no rain falls. The precise date of the commencement of rain greatly differs in different years. The following are the dates for each of the seven years, marking the earliest day on which at least one-tenth of an inch of rain fell, which may be considered as marking roughly the termination of the dry season at Alexandria: 0·18 inch on November 4, 1875; 3·00 inches on October 7, 1876; 0·22 inch on October 16, 1877; 0·93 inch on November 29, 1878; 0·27 inch on December 20, 1879; 0·15 inch on September 27, 1880; from which date the rainfall was all but *nil*, till 0·14 inch fell on November 27, and 0·32 inch on November 15, 1881. Leaving out of view the small sporadic fall in September, 1880, the earliest date for the termination of the summer drought was October 7, and the latest December 20, the mean date of the seven years being November 12.

On advancing from the Mediterranean sea-board into the interior, the climate rapidly changes; the rainfall becomes less and less, and then practically ceases; the air becomes drier, and the sky clearer; the sun's heat stronger, the nights cooler, and the daily range of temperature greater. At Cairo the rainfall is quite insignificant in amount, but occasionally pretty heavy falls occur. Thus on January 10, 1870, 1·02 inch fell, and on May 3 of the same year 0·67 inch. From January to May of the present year 1·16 inch has fallen, of which 0·80 inch fell during the six hours ending 7 P.M. of April 1. The temperature rose at Cairo to 112°·6 on June 5, 1872; to 113°·2 on May 25, 1873; and to 116°·4 on May 20, 1869, the highest recorded at Alexandria being as stated above, 103°·1. During September and October, the mean temperature of the two places is nearly the same, with, however, this essential difference, which must not be lost sight of; the days are much hotter and the nights much colder at Cairo, where consequently greater precaution must be taken against chills at night, these being the fruitful source of diarrhœa, and other complaints which often prove so disastrous during campaigns carried on in such climates as that of Egypt.

COLLIERY VENTILATION

The Principles of Colliery Ventilation. By Alan Bagot, Assoc.M.Inst.C.E., &c. (London: Kegan Paul, Trench, and Co., 1882.)

DURING the last ten years, or, ever since it has become necessary for colliery managers to obtain certificates of competency by examination, there has been

a ready sale for books like the one before us, which treat of a few mining subjects in an elementary manner, and more especially of ventilation, and the chemical and physical properties of the gases that are commonly found in mines. Mr. Bagot has evidently taken considerable pains in amassing his information from various sources, some of them original; and, if we could only add that he appears to have exercised the same degree of care in placing it before the reader, in a concise and orderly form, we would have little else besides commendation to bestow upon his volume. As it is, however, we regret to observe that the whole book is written in a somewhat discursive and disjointed manner. It contains an impossible geological section on p. 109; and nearly every one of its chapters teems with rules and advice for the guidance of all sorts of colliery officials from the engineer to the collier. We had hitherto imagined that the General and Special Rules of the Coal Mines' Regulation Act were already wellnigh as complete as our knowledge and experience could make them up to the present time, and we think, therefore, that Mr. Bagot might, without impropriety, have appended to his work copies of those parts of both which have a direct bearing upon his subject, selecting his examples of Special Rules from amongst those which most meet with his approval. Instead of pursuing such a simple and commendable course, however, he chooses rather to give us his own ideas of what these rules ought to have been; he endeavours to supply what he considers to be omissions, and he makes many statements of a purely dogmatical character which could not bear the touch of close and careful reasoning. Let us take what he says about the duties of a *fireman*, at p. 73, as an example:—

"The fireman's duties are very hazardous. He is a *competent person solely employed to test the pit for gas.* When inflammable gas has been found (and we presume that all viewers will see the propriety of examining before each shift begins work, even where it has not been found) he has to examine the pit once in every shift, or once in every twenty-four hours; should he find gas, he must report the same in a book kept for the purpose. The Act should have made him post a notice at the pit-head containing extracts from the book, showing briefly where gas had been found throughout the mine. He also places 'fire-boards,' or notices of dangerous gas, at the entrance to headings which have been found in his examination to contain it. These boards should be painted red and made easily recognisable to miners who cannot read. Another most responsible duty of the fireman is to act as the 'competent person' where shots are being fired. No shots should be fired where naked lights are used in the vicinity, as a large volume of gas may exude or be discharged after the shot and so become ignited, although the ventilation may be ample; neither should lamps on Davy's principle be used for the operation, but self-extinguishing lamps, such as Stephenson's or Williamson's safety lamps."

The advisability, or otherwise, of substituting self-extinguishing safety lamps for those now commonly used is a question that has agitated the mining community on many occasions before now. Our author, however, seems to regard it as almost a question of his own raising, and as he takes it up with such zeal and pursues it with so much avidity, we propose to devote a few words to its discussion. In the preface we find him saying:—

"Her Majesty's Commissioners appointed to inquire into mining accidents in their 1881 Parliamentary Report draw attention to this risk"—the risk attending the use of Davy and Clanny lamps—"but I think that this report will be but little heeded judging from experience, inasmuch as, on April 25, 1879, I read a paper before the Institution of Mechanical Engineers on the subject, with experiments proving the defects in Davy's lamp and many other modified forms of it in use in mines; and in a work of mine published in 1878, I state the fact that the Davy lamp will explode in an explosive mixture travelling at a velocity of eight feet per second." . . . "If the Government will not be convinced of the folly of sanctioning the use of Davy, Clanny, and all non-extinguishing safety-lamps in mines, the only chance to avoid these disastrous explosions is to appeal to the common sense of mining engineers."

And again—passing over other intermediate references—at page 148:—

"I have continually pointed out the danger of using non-extinguishing lamps in fiery mines, and at last the attention of the Government has been called to the danger by the Commissioners, but great blame attaches, to my mind (*sic*) that this fact was ignored so long."

It seems to us to be both unjust and unfair on the part of our author to bait the Government after this fashion, inasmuch as it was already in possession of a vast mass of information concerning this formerly much-discussed question, long before he began to write about it. Davy himself knew and pointed out the defect of his lamp nearly seventy years ago. Dr. Pereira made experiments to illustrate the same thing for the information of the Select Committee on Accidents in Mines, which sat in 1835. In their Report, that Committee made most urgent representations on the subject to the Government of their day. At the same time a strong effort was made to introduce Upton and Robert's self-extinguishing safety-lamp, which now exists only as a historical curiosity amongst others of the same kind in the Jermyn Street Museum. In 1850 or 1851 the late Mr. Nicholas Wood revived the question, and made the first experiments we know of, which fixed the velocity at which the explosive air must be travelling before the flame will pass through the wire gauze. From that date until the time of his death, thirteen or fourteen years later, he continued to advocate the adoption of self-extinguishing safety-lamps, choosing Stephenson's for his model. About the year 1866 the North of England Institute of Mining Engineers appointed a Committee to consider the matter. They conducted a splendid series of experiments which literally exhausted the subject, and they published the results in their Transactions. About the same time the Government of Belgium appointed a Commission for the same purpose, who, after continuing experiments intermittently over a period of ten years, made a short report to the King, and the result was the immediate promulgation of a law making the use of Mueseler self-extinguishing safety-lamps compulsory in the mines of that country. Finally we might cite the experiences in France, the reports published under the authority of the Commission du Grisou, which has just brought its labours to a close, the interrogatories addressed by the same authority to the principal mining districts of France, the opinions expressed by the various engineers, the discussions which took place, the conclusions, and the official replies.

Having all these facts before its eyes, and remembering

that, according to their own showing, the Commissioners on Accidents have stated nothing that has not been well-known for many years, the Government could not very well be "convinced of the folly of sanctioning the use of Davy, Clanny, and all non-extinguishing lamps in mines," unless it is favoured with some new reasons for doing so in addition to those that have failed to convince so many generations of its predecessors. The Government could not very well retain its dignity, and at the same time shift its ground at the instance of every comer who thinks he possesses the long-sought-for panacea; but there are some eager spirits in our midst who appear to be for ever bent upon goading it into a hare-like speed, forgetful, evidently, of the moral of the fable which gives the final victory to the more slowly travelling tortoise.

We have only one more remark to make, and then we must conclude this already too long notice, namely, that a book which is written ostensibly for the education and information of even a section of the community ought not to contain recommendations of different kinds of apparatus which are apparently made and sold for the pecuniary benefit of the author. Mr. Bagot can have plenty of opportunities for advertising his improved and patented appliances without scattering notices of them through the pages of his books; and we would fain hope and believe that he was unaware of the gravity of his fault at the time he was in the act of committing it in the present instance. WILLIAM GALLOWAY

OUR BOOK SHELF

Theogonie und Astronomie. By A. Krichenbauer. (Vienna: Carl Konegen, 1881.)

DR. KRICHENBAUER believes that he has discovered a new key to ancient mythology. With the help of the Iliad and Odyssey, the gods of Greece are resolved into stars and constellations, and the facts of astronomy are made to explain their nature and attributes, as well as the myths that were told of them. In the deities of Egypt, of Babylonia, of India, and of Iran, Dr. Krichenbauer finds fresh confirmations of his views. The development of this early astronomical theogony falls into two periods, the first period being one of creation and growth, the second of fixity and nationalisation. The first period has its "climacteric" in B.C. 2110, when the Ram already ushered in the year. But its real history belongs to that earlier age when the Bull took the place of the Ram, and it is the Bull, accordingly, which stands at the head of the religious system, and breaks in sunder the egg of the universe. The second period begins with the change of the summer solstice from the Lion to the Crab in consequence of the precession of the equinoxes, and thus falls about 1462 B.C., when the commencement of the year was transferred from the summer solstice to the vernal equinox. The equal division of the path of the sun into the twelve signs of the Zodiac took place about seven centuries later. This, briefly put, is the substance of Dr. Krichenbauer's work. His interpretation, however, of the passages of Homer upon which his theory is based, is purely subjective, and is not likely to commend itself to others. Homeric scholars, at any rate, will not admit that any portion of the Iliad or Odyssey is anything like so old as he would make them, or can contain traditions of anything like so old a period. His acquaintance, again, with the facts that modern research has recovered from the monuments of Egypt and Babylonia, is of the most meagre kind. Hence he is quite unaware that we happen to know a good deal about ancient Babylonian astronomy, and the history of the Zodiacal signs, as has lately been pointed out in NATURE, and that what we know is altogether inconsistent with his statements and conclusions. Thus the year began with the vernal equinox, and the heaven was divided into twelve equal portions at least as early as B.C. 2000, and probably much earlier, while it was in Babylonia that the constellations and Zodiacal signs were first named. On the other hand, there was not the remotest connection between the theology and mythology of Babylonia and Egypt. Before Dr. Krichenbauer again writes on this subject it would be advisable for him to be better acquainted with the results of modern Oriental research.

Atlantis: the Antediluvian World. By Ignatius Donnelly. (London: Sampson Low, Marston and Co. 1882).

OUR only reason for noticing this curious book is that the names of writers of authority which constantly appear in its pages may lead some readers astray. But the author, while quoting them, has neither assimilated their method nor understood the bearing of their facts. In spite of the patient labour bestowed upon the work, and the numerous illustrations with which it is adorned, it is merely another contribution to that mass of paradoxical literature which awaits the "Budget" of a second De Morgan.

The Early History of the Mediterranean Populations, &c., in their Migrations and Settlements. By Hyde Clarke. (London: Trübner and Co., 1882.)

DR. HYDE CLARKE has compared together the devices found on the coins and gems of various ancient cities and countries, in the hope of proving the connection of the populations to which they belonged. The list is a useful one, though defective, but it proves no more than that in a very late period of the history of the Mediterranean peoples certain obvious objects were selected in different places alike as emblems and devices upon coins.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

Speechless Man

IN his notice of my work on "Asia," in last week's issue of NATURE, Mr. Sayce finds fault with me for rejecting the modern doctrine that "man was speechless when the leading races were differentiated from one another." I certainly do reject that doctrine, but not on the ground that he supposes. I reject it as in itself to the last degree improbable, and as utterly inadequate to account for the conditions which have suggested it. Seeing that there are many more radical forms of speech in the world than there are radical physical types, if indeed any of the physical types can be regarded as radical, anthropologists have somewhat rashly concluded that these forms of speech must have sprung up independently of each other after the dispersion of an assumed speechless human race throughout the world. We are in fact asked to believe that the continents were first peopled, here by a black, there by a white, elsewhere by a yellow, a brown, or a red species, all possibly sprung of one stock, but all still ignorant of any except perhaps a sign-language at the time of the dispersion. Then there came a time or times when these diverse species began all of them to babble independently of each other in their diverse independent settlements. Consequently, while the races may have been originally one, the stock languages had each a separate starting-point, and therefore were never originally one. Hence this sufficiently violent assumption is made in order to explain the present diversity of speech on the globe. I, on the contrary, hold that it is a useless assumption, that it explains nothing, that it is an all but incredible hypothesis, and